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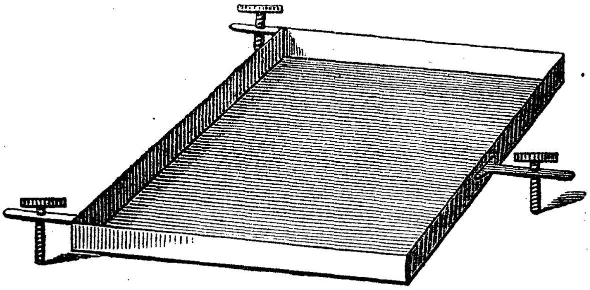
Il emploie une cuvette à trois vis calantes, au fond de laquelle il place une plaque daguerrienne, sur laquelle il laisse tomber quelques gouttes de mercure. A l'aide de ce procédé les vibrations sont à peu près complètement annulées.

La cuvette est à fond plan.



Avant de laisser tomber le mercure sur la plaque daguerrienne, on la frotte avec le doigt et un peu de mercure; alors le fond du liquide devient plus adhérent, ce qui est la principale cause qui empêche les vibrations.

It will be seen that the method of M. de Boë is merely a modification of that described by Prof. Pritchard before the Roya Astronomical Society. (*Monthly Notices*, vol. xiii., Jan. 1853, pp. 61–66; see also vol. xxxvi., Dec. 1875.)—W. N.

On a Method of making a Pendulum swing in an approximately Cycloidal Arc. By General M. C. Meigs, U.S.A.

I have been amusing myself by making a "Baily compensating seconds pendulum" for an old clock.

On hanging it for the first time I notice that it twists in swinging. The twist is synchronous with the vibration of the pendulum, and at the middle of the vibration, when the pendulum is vertical, its suspending spring is flat and straight. The twisted spring is shorter than the flat one, and this twisting therefore shortens the radius of curvature of the arc described by the centre of oscillation after it passes the vertical on each side.

By suitably proportioning the width and thickness of the suspending spring, this shortening of the radius might be so regulated that the arc described would be very nearly, and if the work is perfect accurately, cycloidal.

The twist may be given by making the crutch strike a round bar placed in front of the pendulum rod, and not in the plane of vibration: the further this bar which receives the impulse is from the plane of the pendulum, the greater the twist.

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There are, then, two means of regulating the curvature of the arc, viz.:—

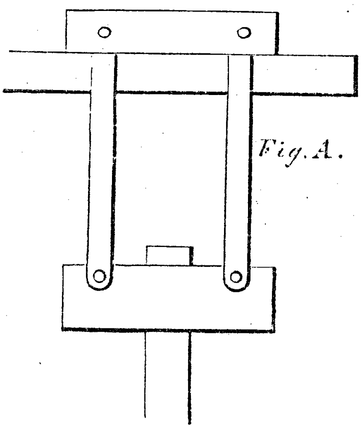
1. Width and length of suspension spring, or, when two parallel springs are used, the distance between them.

2. Distance from the bar which receives the impulse, to the plane of the pendulum.

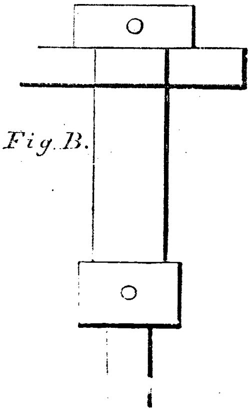
I have never seen these arrangements noted in any publication on the pendulum, and if not heretofore tried, I think it might be well to try them. Huygens' cycloidal cheeks failed to secure superior accuracy.

The ordinary suspension spring probably causes the pendulum to swing in an approximately cycloidal arc, yet it is not generally exact. I think this twisting motion can be made to produce an absolutely isochronous motion through the greatest ordinary or necessary range of change in the arc of vibration of the pendulum of the astronomical clock.

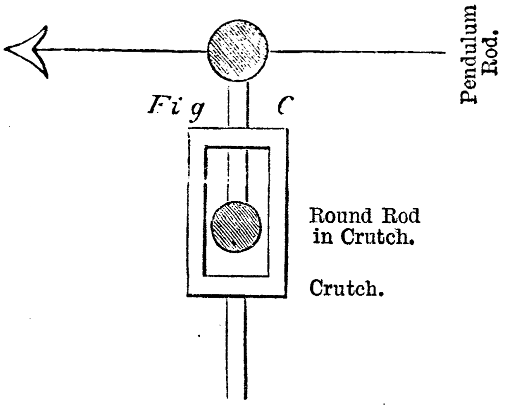
DOUBLE SUSPENSION SPRING.



SINGLE SPRING SUSPENSION



HORIZONTAL SECTION.



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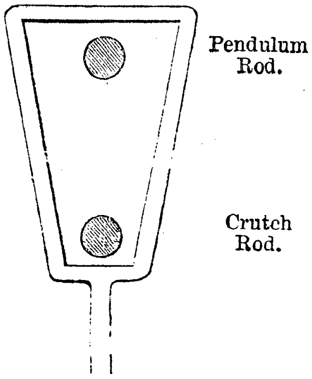

This regulates and limits the twist.

These sketches illustrate constructions suggested. There is a wide range in the disposition of A, B, and C.

Quartermaster-General's Office,
Washington, April 12, 1877.

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